

REMARKS

Claims 1, 3, 4 and 10-15 are amended herein. Support for the amendments to Claims 1 and 15 is found in the specification, for example, at page 11, lines 10-20. Support for the amendment to Claim 4 is found in the specification, for example, at page 13, lines 1-4. The remaining claim amendments are directed to formalities and are fully supported by the original disclosure. Accordingly, no new matter is added to the claims.

Claim 16 is canceled herein without prejudice to, or disclaimer of, the subject matter contained therein. Applicants maintain that the cancellation of a claim makes no admission as to its patentability and reserve the right to pursue the subject matter of the canceled claim in this or any other patent application.

New Claims 20 and 21 are added herein. New Claim 20 is supported by, for example, original Claim 10. New Claim 21 is supported by the specification, for example, at page 8, lines 9-22. Accordingly, new Claims 20 and 21 do not add new matter.

Upon entry of the amendment, Claims 1-15 and 17-21 are pending herein.

Rejection of Claims 1, 2, 7, 9 and 10 under Obviousness-Type Double Patenting

Claims 1, 2, 7, 9 and 10 are rejected under obviousness-type double patenting.

Notwithstanding the obviousness-type double patenting rejection, the presently pending claims have not yet been deemed otherwise allowable. Upon determination of otherwise allowable subject matter in the present application, if appropriate, Applicants will file a Terminal Disclaimer to remove the present obviousness-type double patenting rejection.

Objection to the Specification

The specification is objected to because the phrase "in terms of ethylene glycol" in Claim 1 is allegedly confusing, as a monomer cannot be used as a standard for a calibration curve.

Claims 1 and 15 are amended herein to more clearly indicate that the recited molecular weight is in terms of polyethylene glycol. Such amendment is consistent with the teachings in the specification and the knowledge of those skilled in the art. Accordingly, this amendment does not add new matter.

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Objections to Claim 10

Claim 10 is objected to as being in improper form. The Office Action states that Claim 10 is in improper form as referring to two sets of claims to different features.

Claim 10 is amended herein to no longer be multiply dependent. Accordingly, this rejection is moot.

Rejection of Claims 3, 4 and 11-14 under 35 U.S.C. §112, first paragraph

Claims 3 and 11 are rejected under 35 U.S.C. §112, first paragraph as lacking written description support in the specification for the phrase “at least one.” In order to expedite prosecution of the present application, Claims 3 and 11 are amended herein to remove the phrase “at least one” and replace it therewith the term “a.” However, Applicants note that because the main transition term in each of Claims 3 and 11 is “comprising,” consistent with the canons of claim construction, more than one crosslinking compound, such as, for example, combinations of crosslinking compounds, still fall within the scope of the claims. These amendments Claims 3 and 11 are not intended to be contrary to the traditional canons of claim construction.

Claims 4 and 12-14 are rejected under 35 U.S.C. §112, first paragraph as lacking written description support in the specification for the phrase “at least one.” In order to expedite prosecution of the present application, Claims 4 and 12-14 are amended herein to remove the phrase “at least one” and replace it therewith the term “an.” However, Applicants note that because the main transition terms in each of Claims 4 and 12-14 is “comprising,” consistent with the canons of claim construction, more than one acid generating agent, such as, for example, combinations of acid generating agents, still fall within the scope of the claims. These amendments Claims 4 and 12-14 are not intended to be contrary to the traditional canons of claim construction.

Claim 4 also is rejected under 35 U.S.C. §112, first paragraph as lacking written description support in the specification for the phrase “azine-series.” Claim 4 is amended to remove the objected-to phrase and to replace it therewith the phrase “triazine-containing.” Applicants respectfully submit that the phrase “triazine-containing,” is supported by the specification, for example, at page 13, lines 1-4. Accordingly, the specification fully supports Claim 4, as amended.

Rejection of Claims 4 under 35 U.S.C. §112, second paragraph

Claim 4 is rejected under 35 U.S.C. §112, second paragraph because the term “azine-series” is unclear.

Claim 4 is amended to remove the objected-to phrase and to replace it therewith the phrase “triazine-containing.” Applicants respectfully submit that those skilled in the art are fully aware of the meaning of the phrase “triazine-containing,” and, as such, Claim 4, as amended is clear and definite.

Rejection of Claims 1, 2, 5, 6, 9, 10, 15 and 18 under 35 U.S.C. §103(a)

Claims 1, 2, 5, 6, 9, 10, 15 and 18 are rejected under 35 U.S.C. §103(a) as being obvious over Nakada (US Pat. No. 6,472,012) in view of Ito (US Pub. No. 2003/0157317) and Scholz (US Pat. No. 5,723,175). The Office Action states that Nakada teaches a fluorine compound (B), Ito teaches the molecular weight of the fluorine compound, and Scholz teaches a siloxane oligomer (A) with a molecular weight of at least 500. The Office Action states that it would have been obvious to modify Nakada according to Ito and Scholz based on the advantageous properties taught by Ito and Scholz.

Claims 1, 2, 5, 6, 9, 10, 15 and 18 are non-obvious over Nakada, Ito and Scholz because the cited references do not teach a fluorine compound containing a hydroxyl group and/or an epoxy group which are reactive with a siloxane oligomer or a polysiloxane structure, or a siloxane oligomer having an average molecular weight of 500 to 10000 in terms of polyethylene glycol. Further, the claimed compositions possess characteristics that are superior to and unexpected over the teachings of the references.

Claims 1 and 15, as presently pending, recite that the fluorine compound contains a hydroxyl group and/or an epoxy group which are reactive with the siloxane oligomer or the polysiloxane structure in the fluorine compound. None of Nakada, Ito or Scholz teaches this element. As this element was recited in previously-pending, now-canceled Claim 16, the Office Action pointed to Nishikawa (US Pub. No. 2002/0197485) as teaching this element. However, Applicants respectfully submit that Nishikawa does not teach this element of the claims because Nishikawa does not teach a siloxane oligomer or polysiloxane structure that is reactive with

hydroxyl group of the fluorine compound. Nishikawa is directed to laminates and antireflection films, where one curable composition for the low-refractive index film comprises (a) a fluorine-containing copolymer having a hydroxyl group; (b) a heat curable agent having a functional group which can react with a hydroxyl group; (c) a curing catalyst; and (d) an organic solvent. *Nishikawa* at paragraphs [0142]-[0167]. Nishikawa teaches that the heat curable agent having a functional group which can react with a hydroxyl group is preferably a melamine compound having one or more methylol groups and/or alkoxymethyl groups. *Nishikawa* at paragraph [0155]. Nishikawa lists specific heat curable agents having a functional group which can react with a hydroxyl group as: hexamethyl etheralized methylol melamine compound, hexabutyl etheralized methylol melamine compound, methylbutyl-mixed etheralized methylol melamine compound, methyl etheralized methylol melamine compound and butyl etheralized methylol melamine compound. *Nishikawa* at paragraph [0156]. Thus, Nishikawa teaches organic molecules, in particular, melamine compounds, that react with the hydroxyl group of the fluorine compound. However, Nishikawa does not teach a siloxane oligomer or polysiloxane structure that is reactive with hydroxyl group of the fluorine compound. As such, this claim element is not taught by Nishikawa.

Nakada, Ito and Scholz do not provide that which is lacking in Nishikawa. None of Nakada, Ito and Scholz contemplates a fluorine compound containing a hydroxyl group, much less a compound reactive therewith. Accordingly, None of Nakada, Ito and Scholz contemplate a siloxane oligomer or polysiloxane structure that is reactive with hydroxyl group of the fluorine compound.

In view of the above, none of the cited references Nakada, Ito, Scholz and Nishikawa, teaches a siloxane oligomer or polysiloxane structure that is reactive with hydroxyl group of the fluorine compound. As such, no combination of these references can lead to the invention as claimed in Claims 1 and 15 because no combination of the references teaches all elements of the claims.

Furthermore, none of Nakada, Ito or Scholz teaches a molecular weight of a siloxane oligomer that falls within the range recited in Claims 1 and 15. Neither Nakada nor Ito teaches a siloxane oligomer. Accordingly, Nakada and Ito do not teach the recited molecular weight of the

siloxane oligomer. The Office Action points to Scholz as providing teachings that render the recited molecular weight obvious. In particular, the Office Action states:

Although Scholz doesn't explicitly state the molecular weight of the siloxane oligomer in terms of ethylene glycol, it would have been obvious that Scholz's siloxane oligomer to have a molecular weight of 500 in terms of ethylene glycol, given that Scholz teaches that it will provide antireflection and antifog properties (col. 3, lines 13-14). *Office Action* at page 7.

Thus, the Office Action appears to state that it would have been obvious for Scholz's siloxane oligomer to have a molecular weight of 500 in order to provide the desired antireflection and antifog properties taught by Sholz. However, there is no evidence of record establishing that siloxane oligomers having a molecular weight of 500 demonstrate antireflection and antifog properties. Insofar as the Office Action relies on the assertion that a siloxane oligomer having a molecular weight of 500 provides antireflection and antifog properties, Applicants respectfully request evidence substantiating this assertion in accordance with M.P.E.P. §2144.03. *See also In re Zurko*, 258 F.3d 1379, 1385, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Absent such substantiating evidence, there is no evidence of record demonstrating at which molecular weight siloxane oligomers demonstrate antireflection and antifog properties. Accordingly, absent such substantiating evidence, there is no factual basis for concluding that Sholz's teaching of antireflection and antifog properties would obviously lead to a siloxane oligomer having a molecular weight of 500.

The Office Action also points to Sholz's teachings of a hydrophilic anionic group having a molecular weight of less than 2000 as meeting this claim element. In particular, the Office Action states:

Further, since Scholz teaches that coating comprises a siloxane oligomer and metal oxides (Abstract), wherein the siloxane oligomer further comprises one hydrophilic anionic group (col. 3, lines 28-34) having a molecular weight of less than 2000 (col. 10, lines 11-12) which would be clear that Scholz's siloxane oligomer having a molecular weight of at least 500. *Office Action* at page 7.

Thus, the Office Action appears to state that Sholz's siloxane oligomer comprises a hydrophilic anionic group with a molecular weight of less than 2000. However, the portion of Sholz relied on by the Office Action for this teaching is not directed to the composition or molecular weight

of a siloxane oligomer, but instead of a surfactant, which is a separate component optionally used with Sholz's composition. As provided in Sholz:

In order to coat the silanes of the present invention uniformly onto a hydrophobic substrate from an aqueous system it is desirable to increase the surface energy of the substrate and/or reduce the surface tension of the coating solution. The surface energy may be increased by oxidizing the substrate surface prior to coating using corona discharge or flame treatment methods. These methods may also improve adhesion of the coating to the substrate. Other methods capable of increasing the surface energy of the article include the use of primers such as thin coatings of polyvinylidene chloride (PVDC). Alternatively, the surface tension of the coating composition may be decreased by addition of lower alcohols (C₁ to C₈). **In some instances, however, in order to ensure uniform coating of the article from an aqueous or hydroalcoholic solution, it may be beneficial to add a wetting agent, which is typically a surfactant.** The term "surfactant" as used herein describes molecules comprising hydrophilic (polar) and hydrophobic (non-polar) regions on the same molecule which are sizable enough to be capable of reducing the surface tension of the coating solution. In addition, the preferred surfactants described hereinbelow are capable by themselves of providing a coating which imparts anti-fog properties to substrates or articles coated therewith. Preferred surfactants are described in commonly assigned copending U.S. patent application, Ser. No. 08/354,242, filed Jul. 19, 1996, now abandoned in favor of U.S. patent application Ser. No. 08/741,334, pending, incorporated herein by reference. Certain of these surfactants comprise multiple hydrophilic and or hydrophobic regions on the same molecule. *Sholz* at column 9, lines 12-41 (emphasis added).

Thus, Sholz clearly teaches the surfactant as a separate, independent component optionally used with Sholz's composition. Further, the teaching of an anionic group having a molecular weight of less than 2000 cited in the Office Action is provided in the section describing surfactants. *See Sholz* at column 10, lines 11-12. Thus, this teaching is unrelated to the structure of siloxane oligomers, and, as such, cannot represent a teaching of the molecular weight of Sholz's siloxane oligomer. Accordingly, this teaching of Sholz cannot render obvious the molecular weight of the siloxane oligomer recited in Applicants' Claims 1 and 15.

In view of the above, the teachings of Sholz, alone or combined with the remaining evidence of record, do not provide a siloxane oligomer having a molecular weight of 500. Accordingly, this element is not taught by any of the references, alone or combined. Therefore, no combination of the references can render the claims obvious because no combination of the references teaches all elements of the claims.

Furthermore, the claimed compositions possess characteristics that are superior to and unexpected over the teachings of the references. Applicants' Examples and Comparative Examples demonstrate that the combination of components and the molecular weight of the components of the curing resin have a dramatic effect on the antiscratchability of the resultant antireflective film, which antiscratchability is superior to and unexpected over the teachings of the references. In contrast to the teachings of Nakada, Ito, Scholz and Nishikawa, Applicants have shown that the combination of components as recited in the claims demonstrates both excellent antireflection characteristics as well as good antiscratchability properties. *See Specification* at Table 1 (page 51). These properties are not apparent from the teachings of Nakada, Ito, Scholz and Nishikawa, alone or combined. Thus, these properties are both superior to, and unexpected over, the teachings of the references. For example, Applicants have shown that when a fluorine compound having a fluoroalkyl structure and a polysiloxane structure were used without a siloxane oligomer as the resin for forming the antireflection layer, the resultant layer showed high susceptibility to scratching (see, *e.g.*, Comparative Example 1 and Table 1). Furthermore, Applicants have also shown the importance of the molecular weight of the siloxane oligomer to be used. When a siloxane polymer of lower molecular weight was combined with a fluorine compound having a fluoroalkyl structure and a polysiloxane structure, the resultant resin became gelled, and, thus, was not able to be used in forming an antireflection layer (see, *e.g.*, Comparative Example 2). In contrast, the antireflection layers formed using a resin in accordance with the claims resulted in antireflection layers excellent antireflection characteristics and possessing good antiscratchability properties (see, *e.g.*, Examples 1-5). These properties are not present in the resins of Nakada, Ito, Scholz and Nishikawa, and the cited references provide no guidance for how to modify a resin in order to achieve such properties. Accordingly, the claimed resins possess properties that are both superior to, and unexpected over, the resins of Nakada, Ito, Scholz and Nishikawa. Therefore, the claims are further non-obvious over these references.

New Claim 21 is further Non-Obvious over the References

New Claim 21 is directed to the curing resin composition according to claim 1, wherein the siloxane oligomer (A) is prepared by polymerizing a hydrolyzable alkoxysilane and a siloxane oligomer. New Claim 21 is further non-obvious over the cited references because

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Scholz teaches away from the invention of new Claim 21. Scholz teaches that the anionic property of the silanes in Scholz's invention is critical. *Scholz* at column 5, lines 55-64. Thus, Scholz emphasizes the criticality of a hydrophilic anionic group in the silane. In contrast, new Claim 21 recites that the siloxane oligomer (A) is prepared by polymerizing a hydrolyzable alkoxy silane and a siloxane oligomer. Scholz emphasizes the criticality of a hydrophilic anionic group in the silane, and thereby teaches away from a siloxane oligomer formed by polymerizing a hydrolyzable alkoxy silane and a siloxane oligomer. Accordingly, Scholz teaches away from the invention of new Claim 21.

Rejection of Claims 16 and 19 under 35 U.S.C. §103(a)

Claims 16 and 19 are rejected under 35 U.S.C. §103(a) as being obvious over Nakada (US Pat. No. 6,472,012) in view of Ito (US Pub. No. 2003/0157317) and Scholz (US Pat. No. 5,723,175), in further view of Nishikawa (US Pub. No. 2002/0197485). The Office Action states that Nishikawa teaches a fluorine compound containing a hydroxyl group.

Claim 16 is canceled herein. The rejection of canceled Claim 16 as it applies to Claims 1 and 15 as amended, is addressed above. Claim 19 recites all elements of Claim 15. Accordingly, Claim 19 is non-obvious over the cited references for at least the reasons discussed above.

Rejection of Claims 3, 4 and 17 under 35 U.S.C. §103(a)

Claims 3, 4 and 17 are rejected under 35 U.S.C. §103(a) as being obvious over Nakada (US Pat. No. 6,472,012) in view of Ito (US Pub. No. 2003/0157317) and Scholz (US Pat. No. 5,723,175), in further view of Tsukada (US Pat. No. 6,129,980). The Office Action states that Tsukada teaches a crosslinking agent and an acid generating agent.

Claims 3 and 4 ultimately depend from Claim 1, and Claim 17 ultimately depends from Claim 15. As discussed above, Claims 1 and 15 are non-obvious over any combination of Nakada, Ito and Scholz. Further, Claims 1 and 15 also are obvious over any combination of Nakada, Ito, Scholz and Tsukada because Tsukada does not provide that which is lacking in Nakada, Ito and Scholz. In particular, the cited references do not teach a fluorine compound containing a hydroxyl group and/or an epoxy group which are reactive with a siloxane oligomer or a polysiloxane structure, or a siloxane oligomer having an average molecular weight of 500 to

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10000 in terms of polyethylene glycol. Further, the claimed compositions possess characteristics that are superior to and unexpected over the teachings of the references. Accordingly, Claims 1 and 15, and Claims 3, 4 and 17 which depend therefrom, are non-obvious over the cited references.

Rejection of Claims 3, 4 and 17 under 35 U.S.C. §103(a)

Claims 3, 4 and 17 are rejected under 35 U.S.C. §103(a) as being obvious over Nakada (US Pat. No. 6,472,012) in view of Ito (US Pub. No. 2003/0157317) and Scholz (US Pat. No. 5,723,175), in further view of Iguchi (US Pub. No. 2002/0055064). The Office Action states that Iguchi teaches a crosslinking agent and an acid generating agent.

Claims 3 and 4 ultimately depend from Claim 1, and Claim 17 ultimately depends from Claim 15. As discussed above, Claims 1 and 15 are non-obvious over any combination of Nakada, Ito and Scholz. Further, Claims 1 and 15 also are obvious over any combination of Nakada, Ito, Scholz and Iguchi because Iguchi does not provide that which is lacking in Nakada, Ito and Scholz. In particular, the cited references do not teach a fluorine compound containing a hydroxyl group and/or an epoxy group which are reactive with a siloxane oligomer or a polysiloxane structure, or a siloxane oligomer having an average molecular weight of 500 to 10000 in terms of polyethylene glycol. Further, the claimed compositions possess characteristics that are superior to and unexpected over the teachings of the references. Accordingly, Claims 1 and 15, and Claims 3, 4 and 17 which depend therefrom, are non-obvious over the cited references.

Rejection of Claims 7 and 8 under 35 U.S.C. §103(a)

Claims 7 and 8 are rejected under 35 U.S.C. §103(a) as being obvious over Nakada (US Pat. No. 6,472,012) in view of Ito (US Pub. No. 2003/0157317) and Scholz (US Pat. No. 5,723,175), in further view of Nakamura (US Pub. No. 2001/0035929). The Office Action states that Nakamura teaches an anti-glare layer made of a hard-coat material.

Claims 7 and 8 ultimately depend from Claim 1. As discussed above, Claim 1 is non-obvious over any combination of Nakada, Ito and Scholz. Further, Claim 1 also is obvious over any combination of Nakada, Ito, Scholz and Nakamura because Nakamura does not provide that

which is lacking in Nakada, Ito and Scholz. In particular, the cited references do not teach a fluorine compound containing a hydroxyl group and/or an epoxy group which are reactive with a siloxane oligomer or a polysiloxane structure, or a siloxane oligomer having an average molecular weight of 500 to 10000 in terms of polyethylene glycol. Further, the claimed compositions possess characteristics that are superior to and unexpected over the teachings of the references. Accordingly, Claim 1, and Claims 7 and 8 which depend therefrom, are non-obvious over the cited references.

Rejection of Claims 7 and 8 under 35 U.S.C. §103(a)

Claims 7 and 8 are rejected under 35 U.S.C. §103(a) as being obvious over Nakada (US Pat. No. 6,472,012) in view of Ito (US Pub. No. 2003/0157317) and Scholz (US Pat. No. 5,723,175), in further view of Taruishi (U.S. Pat. No. 6,572,973). The Office Action states that Taruishi teaches an anti-glare layer made of a hard-coat material.

Claims 7 and 8 ultimately depend from Claim 1. As discussed above, Claim 1 is non-obvious over any combination of Nakada, Ito and Scholz. Further, Claim 1 also is obvious over any combination of Nakada, Ito, Scholz and Taruishi because Taruishi does not provide that which is lacking in Nakada, Ito and Scholz. In particular, the cited references do not teach a fluorine compound containing a hydroxyl group and/or an epoxy group which are reactive with a siloxane oligomer or a polysiloxane structure, or a siloxane oligomer having an average molecular weight of 500 to 10000 in terms of polyethylene glycol. Further, the claimed compositions possess characteristics that are superior to and unexpected over the teachings of the references. Accordingly, Claim 1, and Claims 7 and 8 which depend therefrom, are non-obvious over the cited references.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other

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broadener or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In view of the above, Applicants respectfully maintain that claims are patentable and request that they be passed to issue. Applicants invite the Examiner to call the undersigned if any remaining issues might be resolved by telephone.


Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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